Paper id: 252680

Roll No: | | | | | | | | | | | | | |

BTECH
(SEM IV) THEORY EXAMINATION 2024-25
MANUFACTURING PROCESSES

TIME: 3 HRS **M.MARKS: 70**

Note: Attempt all Sections. In case of any missing data; choose suitably.

SECTION A

1. Attempt *all* questions in brief. **02 x 7 = 14**

Q no.	Question	CO	Level
a.	Why machining allowance is provided in casting?	1	K2
b.	Explain the casting defects and residual stresses.	1	K2
c.	Define Rapid prototyping.	2	K1
d.	Differentiate between single point and multi point cutting tool.	2	K2
e.	Explain friability in grinding.	3	K2
f.	Differentiate between brazing and soldering process?	4	K2
g.	How non-conventional machining differs from conventional machining process?	5	K2

SECTION B

2. Attempt any *three* of the following: **07 x 3 = 21**

Q no.	Question	CO	Level
a.	Differentiate the hot working and cold working process. Justify which process is best suitable for wire drawing?	1	K2
b.	What do you understand by Tool geometry? Explain the various angles along with the designation of the given tool in terms of the ASA reference system.	2	K2
c.	Explain grade in the grinding wheel. Outline the grinding wheel specification by using the following marking of a grinding wheel as per ISO: **"51-C-30-M-5-V-17"**	3	K2
d.	Explain the working of TIG & MIG welding in detail with the help of neat sketches.	4	K2
e.	Write brief notes on the following: (i) Electron beam Machining (EBM) (ii) Electrochemical machining (ECM)	5	K1

SECTION C

3. Attempt any *one* part of the following: **07 x 1 = 07**

Q no.	Question	CO	Level
a.	Define extrusion process in detail. Give the advantage, limitations and shapes can be produced by extrusion	1	K2
b.	Explain the solidification phenomena in casting. Discuss the heat transfer during solidification of a casting of a pure metal with the help of cooling curve.	1	K2

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4. Attempt any *one* part of the following: 07 x 1 = 07

Q no.	Question	CO	Level
a.	In an orthogonal cutting operation, the following data have been observed: Uncut chip thickness = 0.127 mm Width of cut = 6.35 mm Cutting speed = 2 m/s Rake angle = 10° Cutting force = 567 N Thrust force = 227 N Chip thickness = 0.228 mm Determine the shear angle, the friction angle, shear stress along the shear plane, and power of the cutting operation.	2	K3
b.	What do you understand by tool wear? Explain crater wear and flank wear with the help of suitable diagram.	2	K2

5. Attempt any *one* part of the following: 07 x 1 = 07

Q no.	Question	CO	Level
a.	What is super finishing? Write short notes on Honing, Lapping and Polishing process.	3	K1
b.	Explain the Grinding wheel wear. Also differentiate between dressing and truing.	3	K2

6. Attempt any *one* part of the following: 07 x 1 = 07

Q no.	Question	CO	Level
a.	Explain the principle of Resistance welding process. Discuss how heat balance is achieved in resistant spot welding?	4	K2
b.	What is HAZ in arc welding? Discuss the phenomenon of weld decay in HAZ with the help of suitable diagram.	4	K2

7. Attempt any *one* part of the following: 07 x 1 = 07

Q no.	Question	CO	Level
a.	Explain the working principle of Abrasive JET Machining (AJM) with a neat diagram. Also explain the effect of standoff distance and abrasive grit size on material removal rate in the AJM.	5	K2
b.	What does LASER stand for? Explain the Principle of Laser beam machining (LBM)with a neat diagram.	5	K2